

REGD PCT/PTO 29 JUN-2004

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
10 July 2003 (10.07.2003)

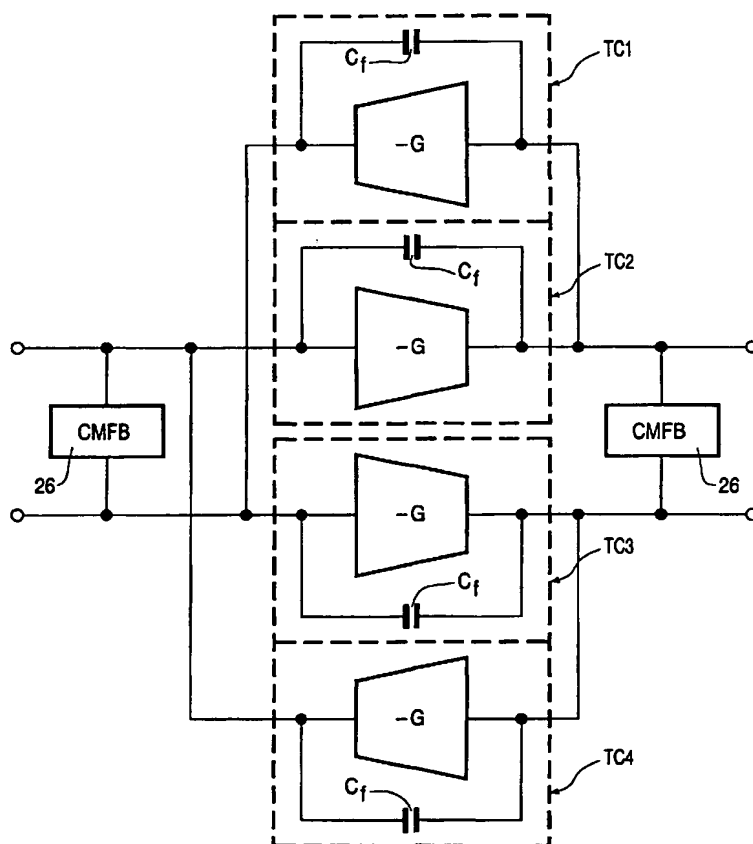
PCT

(10) International Publication Number
WO 03/056700 A1

- (51) International Patent Classification⁷: **H03H 11/42**,
H03F 1/14
- (21) International Application Number: **PCT/IB02/05494**
- (22) International Filing Date:
16 December 2002 (16.12.2002)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
0200094.1 4 January 2002 (04.01.2002) GB
- (71) Applicant (for all designated States except US): **KONINKLIJKE PHILIPS ELECTRONICS N.V.** [NL/NL];
Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).
- (72) Inventor; and
(75) Inventor/Applicant (for US only): **HUGHES, John, B.**
[GB/NL]; Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).
- (74) Agent: **WHITE, Andrew, G.**; Internationaal Octrooibureau B.V., Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),

[Continued on next page]

(54) Title: **BALANCED GYRATOR AND DEVICES INCLUDING THE BALANCED GYRATOR**



(57) **Abstract:** A balanced gyrator comprises interconnected pairs of single-ended inverting class AB transconductors (TC1 to TC4) fabricated from MOSFETs together with common mode feedback circuits (26) connected between balanced inputs (18,19) and outputs (22, 23). Peaking of the frequency response resulting from distortion due to the creation of a high frequency parasitic feedthrough path in the transconductors is overcome by the provision in each of the transconductors (TC1 to TC4) of a non-reciprocal feedback capacitance (C_f) which renders the feedthrough capacitance reciprocal thereby neutralising the feedthrough capacitance of the gyrator. The devices include a filter (Figure 8, not shown) and a transceiver (Figure 10, not shown).

WO 03/056700 A1